BULLETIN

OF THE

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Thomas Morong.

By N. L. Britton.

Thomas Morong, Curator of the Herbarium of Columbia College, died at Boston, Mass., April 26, 1894, after an illness of nearly four months. He had been troubled by a cough during the autumn of 1893, and in December, hoping for a speedy cure, accompanied Mr. John K. Small and the writer of this sketch, to Charleston, S. C., planning to remain for a few weeks in the South and return to his post before spring. But his malady was of a more serious character than he or any of his associates had supposed, and in January, while in Jacksonville, Fla., he was obliged to seek medical treatment, and for the next three months remained in St. Luke's Hospital in that city, improving a little at times so that he could be out of doors and enjoy the rapidly advancing season; but on the whole, failing in general health, so that, while he was favored with the best of medical attendance and care, it became evident by March that he could not recover. He came North about the middle of April, proceeding directly by rail to Boston, where he went to the house of his son, Dr. A. B. Morong, and there died within two weeks after his arrival.

He was too feeble to carry on much correspondence during his stay in Jacksonville, but the few letters written by him indicate that his cheerful, uncomplaining, happy disposition remained with him up to the last.

He was born at Cahawba, Ala., April 15, 1827, and his boyhood was spent in the South. On the death of his father, about

1842, his mother with a family of four sons removed to Woburn, Mass. He has frequently related to us his recollections of his first spring in Northern lands, having been particularly impressed with the beauty of the fruit trees in full bloom. We have heard him say that he was then, and until his majority, under the charge of a guardian. He was prepared for college at Woburn and Medford, entered Amherst, and was graduated from that institution in 1848. A portion of the year following was spent in the Law School of Harvard College, and in 1850 he became a member of Andover Theological Seminary, graduating in 1853, and being ordained a Congregational clergyman in 1854, a profession which he followed almost without intermission until 1888, preaching successively in Iowa City, Iowa, and Webster, Globe Village, Gloucester, Ipswich and Ashland, Mass.

It appears to have been association with William Oakes, of Ipswich, and Dr. J. W. Robbins, of Uxbridge, that first awakened in him a taste for botanical study. These diligent and critical students of the New England flora each furnished him with material for the nucleus of an herbarium, and from Dr. Robbins he received his entire collection of Naiadaceæ, with the understanding that Mr. Morong was to continue Dr. Robbins' researches on this group of plants—a trust that we know has been faithfully fulfilled.

All Mr. Morong's material of this order was incorporated by him with the herbarium which in later years came under his charge, and it there awaits a student who will continue the work begun by Dr. Robbins. The collection of these plants is one of the most complete in existence, almost every described species being represented, most of them abundantly.

The writer's first acquaintance with Mr. Morong was at the Buffalo meeting of the American Association for the Advancement of Science in 1886. He at that time spoke to me of a great desire to visit one of his brothers, a resident of Chile, and at the same time collect and study the flora of some portion of South America, he having been greatly impressed with the success of Dr. Rusby's Bolivian expedition. Some correspondence in relation to the plan passed between us subsequently, and we consulted with Dr. Allen during the New York meeting of the American Association the following year, with the result that between the

three the expedition was arranged, and the explorer set out by sailing vessel for Paraguay in the summer of 1888.

A botanical collector was never better equipped. Even the wooden cases in which the collections were sent home were taken along in pieces with a supply of screws for fastening them together. After a necessarily uneventful voyage of 67 days, the vessel reached Buenos Ayres, and a few days were spent there in consultation with some of the local naturalists, and a few plants collected. But Paraguay was the region chosen, and within a few weeks the explorer was settled in Assumption, and immediately began the work of collecting and of carefully recording in note books all the gross features of the plants obtained. These note books were most systematically kept, and they enabled him on his return to write up the account of his collections in a manner which has rarely been equalled. With Assumption as a centre, Central Paraguay was carefully explored for nearly a year. Opportunity was then offered for an examination of the flora of the boundary region between Paraguay and the Argentine Republic along the Pilcomayo River, through the operations of a surveying party, which ascended that stream in a small steamer. Our friend gladly accepted the opportunity of accompanying the party in the capacity of naturalist, and the stream was ascended several hundred miles, the journey only being cut short by the lack of water in the upper reaches. After several months' absence, a safe return was effected to Assumption, all the botanical collections being brought down unharmed. After a few weeks more spent in and about Assumption, Mr. Morong proceeded to Buenos Ayres, and took passage on the steamer for Valparaiso, Chile. A stop was made at the Falkland Islands, and a few additions there made to the already very rich collections.

Joining his brother at Coquimbo, advantage was taken of the opportunity of studying the Atacama desert flora, and considerable collections made there and at other points in Chile. In the fall of 1890 he returned to the United States by steamer to the Isthmus, and thence to New Orleans and by rail to New York, having been absent considerably more than two years, during which time he had enjoyed continuous good health and encountered a great variety of pleasant experiences. He has frequently alluded to this

trip as one of the pleasantest portions of his life, and regarded it as the means of greatly prolonging his days.

Letters written by him during his absence are proof of the enjoyment he had in his work. They also clearly indicated his wish to follow botany as his subsequent profession rather than to return to the ministry. It became possible for us to offer him the recreated position of Curator of the Columbia College Herbarium, which he gladly accepted, and he entered on its duties soon after his return. Naturally the first wish of all concerned was that he should record the results of his South American explorations, and these were gradually brought together and published during 1892 and 1893 as the 35th Contribution from the Herbarium which he had in charge; it is not usual for a botanical collector to have the satisfaction of working up and publishing his own material. At the same time he brought together matter for a narrative of the Pilcomayo Expedition, but this has not yet been put into type.

Mr. Morong's intimate knowledge of the Naiadaceæ and the trust accepted by him from Dr. Robbins made it very desirable that he should prepare a monograph of the North American representatives of that order. This was also successfully accomplished, and through the cordial coöperation of several friends it became possible to publish it with complete illustration in the third volume of the MEMOIRS of this Club. Incidentally he had paid close attention to other orders of aquatic Spermatophyta, and during his residence in New York he published descriptive accounts of the Halorageæ and Eriocaulaceæ. He had previously discussed Typhaceæ and Nymphæaceæ. During the autumn of 1893 he had been engaged in monographing the North American species of *Smilax*, and had prepared considerable manuscript, most of which can be printed, as well as a large amount of other material, all of which it is hoped may soon be permanently placed on record. He left scarcely any work which can be characterized as unfinished.

He was deeply interested in the work of the Torrey Club, being a frequent contributor to the interest of its meetings, active in its field operations, and for one season took charge of its summer course of instruction. He was elected a Vice-President in 1892, and continued in the office until his death.

His principal botanical publications are as follows:

New species of *Potamogeton* with Notes upon some published Forms. Bot. Gaz. **5**: 50–53 (1880).

Potamogeton Vaseyi Robbins. Bot. Gaz. **5**: 89 (1880).

Potamogeton Hillii n. sp. Bot. Gaz, **6**: 290, 291 (1881).

Notes on Naiadaceæ. Bot. Gaz. **10**: 254–256 (1885).

Collection of aquatic Plants. Bot. Gaz. **11**: 139, 140, 193 (1886).

Revision of the North American Species of *Nuphar*. Bot. Gaz. **11**: 164–169 (1886).

A new Species of *Potamogeton*. Bull. Torr. Bot. Club, **13**: 45 (1886).

Naiadaceæ in the Torrey Herbarium. Bull. Torr. Bot. Club, **13**: 153–162 (1886).

Some new or little known American Plants. Bull. Torr. Bot. Club, **14**: 51, 52 (1887).

Studies in the Typhaceæ. Bull. Torr. Bot. Club, **15**: 1–8; 73–81 (1888).

A new Water-lily. Bot. Gaz. **13**: 124, 125 (1888).

Paraguay and its Flora. Bot. Gaz. **14**: 222–227; 240–253 (1889).

First Glimpses of South American Vegetation. Bull. Torr. Bot. Club, **16**: 43–49 (1889).

The Flora of the Desert of Atacama. Bull. Torr. Bot. Club, **18**: 39–48 (1891).

Myriophyllum Farwellii n. sp. Bull. Torr. Bot. Club, **18**: 146, 147 (1891).

Horticulture in the Copiapo Valley, Chile. Amer. Gard. **12**: 227–230 (1891).

Jesuits' Tea. Bull Pharm. **5**: 549–554 (1891).

Copernicia cerifera. Bull. Pharm. **6**: (1892).

Notes on North American Halorageæ. Bull. Torr. Bot. Club, **18**: 229–246 (1891).

Notes on the North American Species of Eriocauleæ. Bull. Torr. Bot. Club, **18**: 351–362 (1891).

Eriocaulon bilobatum n. sp. Bull. Torr. Bot. Club, **19**: 226, 227 (1892).

An Enumeration of the Plants collected in Paraguay, 1888–1890, Annals N. Y. Acad. Sci. (1899–1893).

A Revision of the North American Naiadaceæ. Mem. Torr. Bot. Club, 3: Part. 2, pp. 65 (1893).

A new Species of *Listera* with notes on other Orchids. Bull. Torr. Bot. Club, 20: 31–39, 121, 122 (1893).

Thomas Hogg. Bull. Torr. Bot. Club, 20: 217, 218 (1893).

Notes upon various Species of Iridaceæ and other Orders. Bull. Torr. Bot. Club, 20: 467–473 (1893.)

Mr. Morong was a most diligent and painstaking worker. He systematically came to his post at eight o'clock in the morning and remained until two in the afternoon. After lunch he never failed to take his hour's *siesta*, a Paraguayan habit which he thoroughly enjoyed, and was back again at work from four until eight or often later. Personally he was a delightful man, always cheerful, usually gay, overflowing with interesting, instructive and amusing remarks, generous to a fault and constantly mindful of the feelings and wishes of others. His death has lost to American Science one of its most earnest, critical and enthusiastic devotees, and to those who have been favored with his companionship a dear friend, a wise adviser, a beloved associate.

A Revision of the Genus Lechea.

By N. L. Britton.

The genus *Lechea* was named by Kalm in 1751* in honor of John Leche, a Swedish botanist. Linnæus took it up in 1753, in the first edition of his "Species Plantarum," and there indicated two species, *L. minor* and *L. major*. His *Lechea major* proved to be a *Helianthemum*, thus leaving *L. minor* as the type of the genus. Michaux added several species in 1803. Spach discussed the order Cistaceæ in 1836, and in the same year appeared Rafinesque's monograph of the genus,† where twenty-one species

*Linnæus, Nova Pl. Gen. 10; Amœn. Acad. 3: 10.

†New Fl. N. A. 89–98 (1836); reprinted by Leggett in Bull. Torr. Bot. Club, 6: 246–252, with annotations.

are described. The genus was critically studied in the field and herbarium by Mr. Wm. H. Leggett for more than ten years prior to his death in 1882, but he published little concerning it, contenting himself for the most part with assigning provisional names to the forms which he thought should be maintained as species, and building up an immense collection of them from all parts of the country. From my intimate relations with Mr. Leggett I naturally took much interest in the plants, and upon his death all his material came into my possession. We had together pored over Rafinesque's monograph, endeavoring to determine which of his names belonged to the forms we could recognize as distinct, and had come to the conclusion that, unless the type specimens could be found, there could be no certainty in using any of them. I have, therefore, endeavored in recent years to ascertain if these types are in existence, but I have been quite unable to find in any of the herbaria of Europe or America a single authentic *Lechea* of Rafinesque. Durand's herbarium at the Jardin des Plantes, Paris, contains many of Rafinesque's plants, and the Delessert herbarium at Geneva many more, but I could find none of the *Lecheas*. Dr. Torrey had a good deal of material from him, but nothing of the genus. The collections of the Botanical Garden at Palermo, Italy, where some of Rafinesque's material was doubtless deposited, were burned some years ago, as Dr. Geo. G. Kennedy ascertained for me on his recent trip to the Mediterranean. Still Rafinesque expressly remarks that he had specimens of all his described species, and they may still turn up somewhere. If they do, some modifications of the names adopted in this paper will doubtless become necessary.

The species so closely resemble each other that the brief characterizations of Linnæus, Michaux and Rafinesque are altogether inadequate to distinguish them, and I have been compelled to examine the type specimens in order to understand what authors have had in hand and reject the names of Rafinesque on account of my inability to correlate them with the species recognized by Leggett. This paper is, then, essentially based on the examination of type specimens. The results of Leggett's study of Rafinesque's monograph may be found by those interested in the BULLETIN, as above cited.

All the *Lecheas* which I have been able to examine in the field bloom very shyly, and the whole plant appears to come into flower at the same time. This occurs in bright sunshine, the petals are fugacious, and thus the flowers are of but little practical value in classification. The characters of the capsules and sepals seem to be constant, as are those of the leaves, both of the sterile, radical shoots and those of the stem and branches. The radical shoots appear in summer, apparently always after the time of flowering, and their leaves reach full development in autumn and early winter. The time to study the plants then, from a systematic standpoint, is in the late autumn.

The following key may serve as an aid to their rapid determination:

Placentæ of the capsule fragile, separating from the thin dissepiments, their margins revolute.
- Leaves of the radical shoots oblong or ovate, not more than about three times as long as wide.
  - Outer sepals longer than the inner; inflorescence leafy. 1. *L. minor.*
  - Outer sepals equalling or shorter than the inner.
    - Capsule oblong; pedicels slender, 2–4 mm. long. 2. *L. racemulosa.*
    - Capsule globose; pedicels about 1 mm. long.
      - Erect; stem leaves large. 3. *L. villosa.*
      - Divaricately branched; stem leaves small. 4. *L. divaricata.*
      - Bushy-branched, tomentose-canescent. 5. *L. maritima.*
- Leaves of the radical shoots lanceolate or linear, more than three times as long as wide.
  - Stem leaves narrowly linear; inner sepals 1-nerved. 6. *L. tenuifolia.*
  - Stem leaves filiform; Cuban. 7. *L. Cubensis.*
  - Stem leaves linear or linear-oblong; inner sepals 3-nerved.
    - Capsule 1 mm. in diameter; branches widely spreading or ascending. 8. *L. patula.*
    - Capsule 1.5 mm. in diameter.
      - Plant pale, canescent; branches nearly erect. 9. *L. stricta.*
      - Plants green; leaves glabrate; branches ascending.
        - Calyx densely covered with appressed, white hairs. 10. *L. Torreyi.*
        - Calyx merely strigose-pubescent. 11. *L. Leggettii.*
    - Capsule 2–2.5 mm. in diameter.
      - Outer sepals longer than the inner. 12. *L. tripetala.*
      - Outer sepals not longer than the inner. 13. *L. intermedia.*

Placentæ crustaceous, the margins not revolute, dissepiments persistent; pedicels deflexed. 14. *L. Drummondii.*

Descriptions of the Species.

I. LECHEA MINOR L.

Lechea minor L. Sp. Pl. 90 (1753). (Type in Linnæan Herbarium.)

Lechea thymifolia Michx. Fl. Bor. Am. 1 : 77 (1803). (Type in Michaux Herabarium.)

Lechea Novæ-Cæsareæ Austin; A. Gray, Man. Ed. 5, 81 (1867). (Type in Columbia College Herbarium.)

Erect, 1.5–6 dm. high, freely branching above, more or less pilose-pubescent with slightly spreading hairs throughout. Branches slender, erect, ascending or the lower sometimes spreading; stem-leaves oval or oblong, 8–15 mm. long, 4–7 mm. wide, subacute or obtuse, ciliate, the upper smaller; petioles 1–2 mm. long; leaves of the radical shoots oval or oblong, obtuse, 6–10 mm. long, 5–6 mm. wide; panicle usually very leafy; flowers close together, somewhat secund; outer sepals longer than the inner and mostly exceeding the obovoid or globose capsule.

Occurs in dry fields and thickets, Eastern Massachusetts to Florida, west to Michigan and Louisiana.

Much search has been necessary in order to determine which of the forms should be regarded as the true *L. minor*. The species is badly mixed in the Linnæan herbarium. There are two sheets so marked. The first bears a fruiting specimen of the plant above described, with mature radical leaves, as well as the upper part of a fruiting plant of what I take up as *L. villosa* Ell., together with two specimens of mature, radical shoots of the same. The second sheet carries an immature specimen of *L. maritima* Leggett, marked by Sir J. E. Smith "racemulosa Michx." Pinned to this sheet is another, bearing a plant too young for satisfactory determination, marked "eadem" by Smith, not marked by Linnæus.

There are also two sheets not marked by Linnæus. One of them has a specimen of a very young plant of a specimen marked "racemulosa Michx," by Smith; the other carries specimens of what I here take as the true *L. minor*, and evidently the type of the second synonym given by Linnæus in the "Species Plantarum," as it is labeled "Capraria fol. integerrimis, fl. virg."

It will thus be seen that not a bit of the plant which appears as *L. minor* L. in current American text-books entered into the original description of the species.

Sir J. E. Smith apparently regarded the species which I take up as *L. villosa* Ell. (*L. major* Michx., not L.) as the true *L. minor*, and previously to my examination of the Linnæan types I had taken this view, and it so appears in my Catalogue of Plants found in New Jersey. But I was unable to trace this to any of the synonyms cited by Linnæus, and while it is clearly a part of the original, it seems to me that the name more properly belongs to the species as characterized above.

2. Lechea racemulosa Michx.

Lechea racemulosa Michx. Fl. Bor. Am. 1: 77 (1803). (Type in Michaux Herbarium).

Erect, 1.5–4.5 dm. high, freely branching above, slightly pilose-pubescent throughout with appressed hairs. Branches slender, divergent or ascending; leaves of the stem oblong or linear-oblong, obtuse or subacute, narrowed at the base, 8–20 mm. long, 3–4 mm. wide; leaves of the radical shoots oval or oblong, 4–8 mm. long, 3–6 mm. wide, obtuse; petioles about 2 mm. long; panicle sparsely leafy; flowers oblong on slender, divergent pedicels 2–4 mm. long; outer sepals equaling or shorter than the inner; capsule ellipsoid.

In dry, sandy and rocky soil, Martha's Vineyard to South Carolina, west to Indiana and Tennessee.

3. Lechea villosa Ell.

Lechea major Michx. Fl. Bor. Am. 1: 76 (1803), not L. (Type in Michaux Herbarium.)

Lechea villosa Ell. Bot. S. C. & Ga. 1: 184 (1817). (Type in Elliott Herbarium.)

Erect, stout, villous-pubescent with spreading hairs, 3–6 dm. tall, branching above or sometimes throughout, leafy. Branches ascending or the lower sometimes spreading; leaves of the stem oblong-elliptic, obtuse but pointed, 1½–2½ cm. long, 6–10 mm. wide; petioles 1 mm. long; leaves of the radical shoots broadly oblong, obtuse, 6–8 mm. long, 4–6 mm. wide; ultimate branchlets often recurved; pedicels 1 mm. long; flowers more or less secund-scorpoid, close together; outer sepals about equaling the inner; capsule depressed-globose, 1 mm. in diameter.

In dry fields, Massachusetts to Florida, west to Southern Ontario, Illinois and Texas.

4. LECHEA DIVARICATA Shuttlw.

Erect, divaricately branched, branches slender, very leafy, densely villous-pubescent. Leaves of the stem and branches small, 4–8 mm. long, oval, oblong or linear-oblong, acute, clothed with spreading hairs on both surfaces; inflorescence very leafy; flowers obovoid; pedicels about 2 mm. long, not secund; outer sepals shorter than the inner; capsule globose, nearly 2 mm. in diameter.

Florida (Rugel, Garber, Curtiss), Texas (E. Palmer, No. 2025).

Distributed under the above name by Shuttleworth from Rugel's Florida collections, but apparently here first described. I have not seen the radical shoots and am consequently uncertain of the alliance of the species, but think there is little doubt of its near relationship to *L. villosa*.

5. LECHEA MARITIMA Leggett.

Lechea thymifolia Pursh, Fl. Am. Sept. 91 (1814), not Michx. (Type in the Kew Herbarium.)

Lechea maritima Leggett; Britton, Prel. Cat. N. J. 13 (1881). (Type in Columbia College Herbarium.)

Lechea minor var. *maritima* A. Gray, Man. Ed. 6, 77 (1890). (Type in Gray Herbarium.)

Densely tufted, branching from the base, stout, rigid, 1.5–3 dm. tall, tomentose-canescent with whitish hairs. Primary branches spreading or ascending, numerous; flowering branches slender, divergent, elongated; leaves of the stem linear or linear-oblong, obtuse or acute, 8–20 mm. long, 2–4 mm. wide; leaves of the radical shoots oblong or ovate-oblong, 6–8 mm. long, 3–5 mm. wide, densely canescent; pedicels 1 mm. long; flowers densely clustered; outer sepals slightly shorter than the inner; capsule globose, 1 mm. in diameter.

In sands of the sea-shore and in sandy pine barrens, Massachusetts to Georgia. Apparently also at the Crawford Notch, White Mountains of New Hampshire.

The radical shoots of this species do not begin to form until late autumn and are not fully developed until December.

6. LECHEA TENUIFOLIA Michx.

Lechea minor var. γ T. & G. Fl. N. A. 1: 154 (1838). (Type in Columbia College Herbarium.)

Lechea tenuifolia Michx. Fl. Bor. Am. 1: 77 (1803). (Type in Michaux Herbarium.)

Lechea thesioides Spach, Comp. Bot. Mag. 1: 284 (1835). (Type in Paris Herbarium.)

Densely tufted, stems erect, slender, 1–2.5 dm. high, divaricately branched above, minutely strigose-pubescent. Branches slender, elongated; leaves of the stem narrowly linear or nearly filiform, 4–15 mm. long, 1 mm. or less wide, acute, sessile, or very nearly so; leaves of the radical shoots linear, sessile, 6–8 mm. long, about 1 mm. wide; pedicels 2 mm. long; flowers more or less secund, bracted by the minute upper leaves; outer sepals equalling or slightly exceeding the inner; capsule globose, 1 mm. or a little more in diameter.

In dry, open places, Eastern Massacnusetts to Wisconsin, south to Florida and Texas.

7. Lechea Cubensis Leggett.

Lechea Cubensis Leggett, Bull. Torr. Club, 6: 252 (1878). Type in Columbia College Herbarium.)

Erect, branched, 1–1½ dm. high, finely appressed-pubescent throughout, the branches filiform, ascending. Leaves of the stem and branches filiform, 4–8 mm. long, scarcely 0.5 mm. wide; flowers oblong, not secund; pedicels filiform, 4–6 mm. long; outer sepals slightly shorter than the inner; capsule globose, about 1 mm. in diameter.

Cuba (C. Wright, No. 3518).

This interesting species, known to me only from one collection, is placed next to *L. tenuifolia*, but the material for examination is too meagre to afford a satisfactory diagnosis. It is certainly distinct from any of the rest. Its radical shoots are unknown.

8. Lechea patula Leggett.

Lechea patula Leggett, Bull. Torr. Club, 6: 251 (1878). (Type in Columbia College Herbarium).

Bushy, usually divergently branched, but branches sometimes ascending, appressed-pubescent, 1.5–4.5 dm. high. Leaves of the stem and branches linear or oblong, acute, 4–9 mm. long, 1 mm. or less wide; leaves of the radical shoots canescent, linear-oblong or somewhat spatulate, subacute, 6–10 mm. long, 1–2 mm. wide; flowers minute, globose; outer sepals about equalling the inner; capsule globose, 1 mm. in diameter.

Florida and South Carolina.

This was distributed by Shuttleworth from Rugel's collections as *L. nana*.

9. Lechea stricta Leggett.

Erect, strict, 3–5 dm. tall, densely branched, pale, strigose-canescent all over or more glabrate in age. Branches slender, straight, nearly erect; leaves of the stem linear-oblong, 1–2.5 cm. long, 1–2 mm. wide, acute or subobtuse; leaves of the radical shoots linear-oblong, much smaller than those of the stem, 4–7 mm. long, 1 mm. or less wide, acute; pedicels 2–3 mm. long; outer sepals shorter than or equalling the inner; capsule globose, 1.5 mm. in diameter.

On dry prairies, Illinois, Wisconsin and Iowa.

10. Lechea Torreyi Leggett.

Lechea Torreyi Leggett; S. Wats. Bibl. Index, 1: 81 (1878). (Types in Columbia College Herbarium.)

Lechea racemulosa Hook. Journ. Bot. 1: 193 (1834), name only, not Michx.

Cinereous-pubescent, much branched, 2.5–4.5 dm. high, the branches ascending. Leaves of the stem and branches linear, 8–12 mm. long, about 2 mm. wide, acute, those of the radical shoots smaller and narrower, finely appressed-pubescent; flowers numerous, short-pedicelled; calyx densely covered with appressed white hairs; capsule obovoid or subglobose, 1.5 mm. in diameter; outer sepals shorter than the inner.

Florida and South Carolina.

11. Lechea Leggettii Britt. & Holl.

Lechea minor Lam. Tabl. Encycl. *t. 52, f. 1* (1791), not L.

Lechea Leggettii Britt. & Holl. Prel. Cat. N. Y. 6 (1888). (Types in Columbia College Herbarium.)

Lechea Leggettii var. *pulchella* Britt. & Holl. Prel. Cat. N. Y. 6 (1888).

Erect, rather slender, freely branched, somewhat strigose-pubescent or nearly glabrous, 2.5–5 dm. tall. Branches slender, spreading or ascending; leaves of the stem linear or linear-oblong, acute or obtuse, 1–2.5 cm. long, 1–2 mm. wide, sessile or nearly so; leaves of the radical shoots oblong-linear, 4–6 mm. long, 1 mm. wide, acute; panicle open, its slender branches divergent; flowers somewhat secund; pedicels 1–2 mm. long; outer sepals about equalling the inner; capsule obovoid or subglobose, 1.5 mm. in diameter.

In dry soil, Long Island, N. Y., to Indiana, south to Virginia and Pennsylvania.

The nearest affinity of this species is with the preceding, with which I have sometimes thought of uniting it. It was distributed as *L. Torreyi* in Mr. Heller's Virginia collections of 1893.

12. LECHEA TRIPETALA (Moc. & Sesse).

Helianthemum tripetalum Moc. & Sesse; D.C. Prodr. 1: 284 (1824). (Founded on unpublished plate of Mocino and Sesse).

Lechea Skinneri Benth. Bot. Voy. Sulph. 99 (1844). (Type in Kew Herbarium.)

Low, 7–15 cm. high, much branched, clothed with long, whitish, appressed hairs. Leaves of the stem and branches filiform or linear, acutish, 8–10 mm. long, mm. or less wide; "leaves of the radical shoots narrower, appressed-canescent with long hairs;" flowers short-pedicelled; outer sepals subulate, longer than the inner, all densely pubescent; capsule depressed-globose, 2–2.5 mm. in diameter.

Guatemala (Skinner); San Luis Potosi (Parry and Palmer, No. 31); near Guadalajara, Jalisco (Pringle, No. 4496).

13. LECHEA INTERMEDIA Leggett.

Lechea Leggettii var. *intermedia* Britt. & Holl. Prel. Cat. N. Y. 6 (1888), name only.

Erect, strict, 2–5 dm. tall, branching above, sparingly strigose-pubescent. Branches nearly erect, short, slender; leaves of the stem oblong-linear, 1–2 cm. long, 2–3 mm. wide, acute, nearly sessile; leaves of the radical shoots oblong-linear, shorter than those of the stem, 8–10 mm. long, 1 mm. wide, somewhat larger than those of *L. Leggettii;* pedicels 2–4 mm. long, slender; outer sepals not longer than the inner; capsule globose or depressed-globose, 2 mm. in diameter.

In dry, mostly rocky soil, New Brunswick and Ontario to Pennsylvania.

This very well marked species is almost confined to hilly or mountainous districts. Its radical shoots are mature in November.

14. LECHEA DRUMMONDII (Spach) T. & G.

Lecidium Drummondii Spach, Comp. Bot. Mag. 1: 287 (1835). (Type in the Paris Herbarium.)

Lechea Drummondii T. & G. Fl. N. A. 1: 154 (1838). (Type in Columbia College Herbarium.)

Linum Sansabeanum Buckl. Proc. Acad. Phila. 1861, 450 (1861), according to Gray.

Sparingly pubescent, 1–2 dm. high, stems slender, wiry, much branched, decumbent or erect, the branches ascending. Leaves narrowly linear, 6–12 mm. long, 0.5 mm. wide, scattered, the upper minute; flowers solitary in the axils of the subulate upper leaves, secund, slender-pedicelled, the pedicels deflexed and 2–4 mm. long in fruit; calyx strigose-pubescent, the outer sepals about as long as the inner; capsule depressed-globose, 2 mm. in diameter.

Texas (Drummond, No. 19; Wright; Lindheimer, No. 16; Berlandier, Nos. 631, 1028, 2041, 2458; E. Hall, No. 31; Curtiss' N. A. Plants, No. 232; Sabine River, Leavenworth).

Fossil Salvinias, including Description of a new Species.

By Arthur Hollick.

(Plate 205.)

The genus *Salvinia* is represented in the flora of to-day by thirteen recognized species, which are, with the single exception of *S. natans* (L.) All., confined to tropical regions. This latter species is well known in Europe and Asia, and has been found or reported from four localities in North America, viz.: Western New York and Missouri (*fide* Gray's Manual, 6th Ed., 701 [1890]); Minnesota (Conway MacMillan, Bull. Torr. Bot. Club, 18: 13 [1891]); Southeastern New York (Thos. Craig, Proc. Nat. Sci. Assn. S. I., Oct. 14, 1893). In all these localities, however, the indications are that the plant was introduced, and that it is not native on this continent.

In the fossil state the genus has been well identified from recent geological horizons—upper cretaceous and tertiary—in Europe and America, and thirteen species have been described.*

* 1. *Salvinia reticulata* (Ettingsh. in part), Heer, Fl. Tert. Helvetiæ, 3: (1859), 156, *pl. 145, f. 16.* (*Dalbergia reticulata* Ettingsh. Beitr. z. Kenntniss d. Foss. Fl. v. Tokay, Sitzb. d. K. Akad. Wiss. Wien, Math.-Nat. Cl. 11: (1853), 813, *pl. 4, f. 5*).

2. *Salvinia Mildeana* Gœpp. Tert. Fl. v. Schossnitz in Schlesien (1855), 5, *pl. 1, f. 21-23;* Unger, Syll. Pl. Foss (1860), 5, *pl. 1, f. 7–10;* Ettingshausen, Foss. Fl. d. Tert.-Beck. v. Bilin, Denkschr. d. K. Akad. d. Wiss. Wien, Math.-Nat. Cl. 26: (1866), 94, *pl. 2, f. 23;* Heer, Miocene Baltische Fl. (1869), 17, *pl. 3, f. 1, 1b, 2.*

Ten of these are from Europe and three from America. It is doubtful if they should all be retained in the genus, but most of them are too well defined to admit of any doubt as to their botanical affinities.

The new species here described was recently brought to light while examining a quantity of undetermined material collected in 1883–'84, at Carbonado, Wash., by Mr. Edward Lorrance, under the direction of the late Professor J. S. Newberry. The specimens include about fourteen individuals, perfect and fragmentary, and upon some of them I found labels, in Professor Newberry's handwriting, with the name *Salvinia elliptica*, n. sp., which name I have retained. The best ones are figured in the accompanying plate, together with an enlargement to show the arrangement of the pits, and a figure of each of the other fossil species thus far described, for purposes of comparison. In this latter connection I wish to acknowledge my indebtedness to Professor Lester F. Ward, of the United States Geological Survey, for references to several species which I should have otherwise missed.

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3. *Salvinia formosa* Heer, Fl. Tert. Helvetiæ, l. c. *f. 13, 13b, 15;* Velenovsky, Fl. a. d. Ausgebr. Tert. Let. v. Vrsovic bei Laun (1881), 12, *pl. 1, f. 14–17;* Zittel, Handb. d. Palæontologie, 2: (1890) *f. 118 (3).*

4. *Salvinia cordata* Ettingsh. Foss. Fl. d. Tert.–Beck. v. Bilin, l. c. *f. 19, 20;* Zittel, l. c. *f. 118 (1).*

5. *Salvinia Reusii* Ettingsh. l. c. *f. 21, 22;* Zittel, l. c. *f. 118 (2).*

6. *Salvinia Alleni* Lesq. Tert. Fl. (1878), 65, *pl. 5, f. 11;* Cret. & Tert. Fl. (1883), 136, *pl. 21 f. 10, 11.* (*Ophioglossum Alleni* Lesq. Hayden's U. S. Geol. & Geog. Surv. Ann. Rept. (1872), 371).

7. *Salvinia cyclophylla* Lesq. Hayden's U. S. Geol. & Geog. Surv. Ann. Rept. (1873), 408; Tert. Fl. (1878), 64, *pl. 5, f. 10, 10a.*

8. *Salvinia attenuata* Lesq. Hayden's U S. Geol. & Geog. Surv. Ann. Rept. (1874), 296; Tert. Fl. (1878), 65, *pl. 64, f. 14, 14a*

9. *Salvinia Ehrhardti* Probst, Beschr. d. Foss. Pflanzenreste a. d. Molasse v. Heggbach O. A. Biberach etc. Jahresh. d. Ver. f. Vaterl. Naturk. i. Wurttemberg, 40: (1884), 74, *pl. 1, f. 3.*

10. *Salvinia excisa* Probst, l. c. *f. 4.*

11. *Salvinia spinulosa* Probst, l. c. 75, *pl. 1, f. 5.*

12. *Salvinia oligocænica* Staub, Aquitanische Fl. d. Zsilthales, Jahrb. d. K. Ungar. Geol. Anst. 7: (1887), 235 (15), *pl. 19, f. 2, 2a.*

13. *Salvinia aquensis* Sap. Ann. Sci. Nat. 7e Ser. Bot. 7: (1888), 27, *pl. 2, f. 1, 1a, 1b.*

Salvinia elliptica Newb.

Pl. 205, f. 14, 14a, 15.

Leaves small, $\frac{1}{2}$–$1\frac{5}{6}$ in. long, $\frac{3}{8}$–$\frac{1}{4}$ in. wide, elliptical to almost orbicular in outline, cordate at base, more or less emarginate at apex; midrib well defined; surface marked with relatively large but few pits, arranged in rows, which radiate from the midrib at an acute angle upward.

Formation and locality: upper cretaceous (?) Carbonado, Washington.

This beautiful little *Salvinia* is clearly distinct from any species hitherto described. In outline the larger specimens do not differ much from *S. Mildeana* Goepp.*[2] (f. 5), and the smaller ones approach the forms of *S. cordata* Ettingsh.*[4] (f. 7), *S. formosa* Heer *[3] (f. 6) and *S. Ehrhardti* Probst. *[9] (f. 2), but from all of these it may be readily distinguished by its few large pits, as compared with the numerous small ones of the species mentioned. It is, perhaps, more nearly like the latter, all things considered. *S. spinulosa* Probst.*[11] (f. 4) is different both in size and shape, and the others offer no pretence for comparison whatsoever; in fact, we may well doubt whether some of these should be retained in the genus. The peculiar, reticulate nervation and absence of pit markings in *S. Alleni* Lesq.*[6] (f. 12), *S. reticulata* (Ettingsh. in part), Heer *[1] (f. 13) and *S. cyclophylla* Lesq.*[7] (f. 11), at once serve to separate them from all the others, and the latter is especially open to suspicion on account of its well defined midrib with irregular, pinnately arranged branches—a structure entirely foreign to the genus. It is significant that *S. reiculata* was originally described as a pod of *Dalbergia*, and *S. Alleni* as a leaf of *Ophioglossum*, while *S. cyclophylla* would not be described to-day as a *Salvinia*. All but the latter one of these three are, however, so very close in form, nervation and apex, to *Tmesipteris* Bernh., especially in the case of *S. Alleni*, that I wonder at their never before having been recorded in this connection.

S. oligocænica Staub*[12] (f. 1) and *S. aquensis*[13] (f. 9) are too fragmentary and imperfect for exact comparison, but they appear to be more or less closely allied. *S. attenuata* Lesq.*[8] (f. 10) is unique, on account of its lack of any midrib, and the nervation which extends from base to summit. Were it not for the ap-

parent pit markings it would be strikingly like two lobes of a *Marsilea* leaf. *S. excisa* Probst *[10] (f. 3) seems undoubtedly to represent nothing more than a pinnule of some fern, probably an *Asplenium*.

In view of the above facts, the following rearrangement of the species seems advisable:

SALVINIA (Micheli) Schreb.

S. Mildeana Goepp. (1855).
S. formosa Heer (1859).
S. cordata Ettingsh. (1866).
S. Reusii Ettingsh. (1866).
S. Ehrhardti Probst (1884).
S. spinulosa Probst (1884).
S. oligocænica Staub (1887).
S. aquensis Sap. (1888).
S. elliptica Newb. (1894).

MARSILEA Linn.

M. ATTENUATA (Lesq.) = *Salvinia attenuata* Lesq. (1874).

TMESIPTERIS Bernh.

T. RETICULATA (Ettingsh. in part) = *Dalbergia reticulata* Ettingsh. (1853); *Salvinia reticulata* Heer (1859).

T. ALLENI (Lesq.) = *Ophioglossum Alleni* Lesq. (1872); *Salvinia Alleni* (1878).

PHYLLITES Sterub.

P. CYCLOPHYLLA (Lesq.) = *Salvinia cyclophylla* Lesq. (1873).

ASPLENIUM L.

A. EXCISA (Probst) = *Salvinia excisa* Probst (1884).

Explanation of Plate 205.

Fig. 1. *Salvinia oligocænica* Staub, Jahrb. K. Ungarn. Geol. Anst. **7**: *pl. 19, f. 2.*

Fig. 2. *Salvinia Ehrhardti* Probst, Jahresh. Ver. Vaterl. Naturk. Württemb. **40**: *pl. 1, f. 2.*

Fig. 3. *Salvinia excisa* Probst, l. c. *f. 4.*

Fig. 4. *Salvinia spinulosa* Probst, l. c. *f. 5.*

Fig. 5. *Salvinia Mildeana* Goepp. Ung. Syll. Pl. Foss. *pl. 1, f. 7.*

Fig. 6. *Salvinia formosa* Heer, Fl. Tert. Helvetiæ, **3**: *pl. 145, f. 13.*

Fig. 7. *Salvinia cordata* Ettingsh. Foss. Fl. Tert.-Beck. Bilin, *pl. 2, f. 19.*

Fig. 8. *Salvinia Reusii* Ettingsh. l. c. *f. 21.*
Fig. 9. *Salvinia aquensis* Sap. Ann. Sci. Nat. 7e Ser. Bot. 7 : *pl. 2, f. 1.*
Fig. 10. *Salvinia attenuata* Lesq. Tert. Fl. *pl. 64, f. 14.*
Fig. 11. *Salvinia cyclophylla* Lesq. Tert. Fl. *pl. 5, f. 10.*
Fig. 12. *Salvinia Alleni* Lesq. Cret. & Tert. Fl. *pl. 21, f. 11.*
Fig. 13. *Salvinia reticulata* (Ettingsh. in part) Heer, Sitzb. K. Akad. Wiss. Wien, 11 : *pl. 4, f. 5.*
Figs. 14, 14*a*, 15. *Salvinia elliptica* Newb. (*f. 14a*=nat. size × 2).

On a Species of Helianthemum not recognized in our Text-Books.

By Eugene P. Bicknell.

Although but one species of *Helianthemum* is recognized in the flora of the Eastern States north of New Jersey, I am fully satisfied that two species inhabit the region, closely related species, it is true, but, as I shall hope to show, perfectly distinct plants. Singularly enough, the more common of these plants is the one which has been overlooked, at least the less common plant, as I have encountered the two about New York, is unmistakably the one mainly intended by our text-books under the name *H. Canadense* Michx., though in some descriptions it is evident that the two plants have been confused.

With recent writers the name *H. Canadense* Michx. has given place to *H. majus* (L.), B. S. P., the latter name being clearly available under the belief which has all along been entertained that there existed but a single Eastern species of the genus. Now, however, that a second species presents itself to be reckoned with, the question of the availability of the name *majus* revives under an entirely new aspect. Indeed there would seem to be a fair probability that the name *Canadense* will be found to hold for the plant of our text-books, and that the name *majus* will be available for the species here brought forward. This view is perhaps fairly inferable from the following considerations: It is, of course, well understood that the apetalous state of a *Helianthemum* was by Linnæus mistaken for a *Lechea* and named by him *Lechea major*. This name having priority in "Species Plantarum" over *Cistus Canadensis*, which it has always been taught was merely the earlier flowering stage of the same plant, has been adopted for the sup-

posed single species of *Helianthemum* inhabiting the "Canada" of that day. As a matter of fact, however, the apetalous state of true *H. Canadense* Michx., as here defined, does not closely resemble a *Lechea*, while the corresponding state of the newly recognized species is, in a marked degree, suggestive of a plant of that genus. Indeed, I have only lately, while searching for the dead winter stems of the *Helianthemum*, mistaken them for those of *Lechea major* Michx., and at first passed them by, an oversight which no one, I think, would be likely to commit in the case of true *H. Canadense*. It would appear, therefore, not at all improbable that the *Helianthemum* described by Linnæus as *Lechea major* was in reality the plant here in view, and that his *Cistus Canadensis* was after all a different plant. An examination of the type specimens in the Linnæan herbarium can alone settle the question, and may prove that the plant here called *majus* requires a different name; but for the purpose of more easily handling the plants in this note, I adopt provisionally the name *H. majus* (L.), for the newly recognized plant, reserving the name *H. Canadense* for our well-known Eastern species.

HELIANTHEMUM CANADENSE (L.) Michx.

From three inches to, rarely, two feet high, the primary flowers borne at a height of from four to twelve inches; erect, or occasionally very low and a little depressed; branches few, slender, often somewhat flexuous, commonly several inches long, and sometimes reaching a length of ten inches, simple or again branched; stem and branches at first pale, becoming reddish or purplish with age, loosely pubescent, or weakly hirsute with irregularly spreading stellate hairs, becoming hoary with close pubescence above, glabrate when old; leaves from near the base of the stem, on very short petioles, alternate narrowly oblong, or somewhat oblanceolate, obtuse, or sometimes acute, averaging less than an inch long by 3″ wide, an extreme size being 15″ x 4″, margins at length revolute; below hoary with stellate pubescence, green above but clothed with short stellate hairs, the upper surface becoming harsh and scabrous; primary flower large, solitary, at first sub-terminal, but subsequent development of the plant leaves it in the axil of a branch or in the angle of the widely bifurcated stem, where, later in the season, the remains of the capsule may be found; occasionally a second solitary flower is produced some distance above the first; pedicel of the flower slender, 2″ to 6″ long; calyx finely pubescent and more or less loosely pilose; narrow outer sepals much shorter than the inner;

flower large, bright yellow, 9″–15″ broad; capsule 3″ to 4″ long, ovoid, or obovoid, rounded above; apetalous flowers borne at short intervals along the branches, either singly or in peduncled clusters, which are sometimes closer and more numerously flowered above, but never closely aggregated; outer sepals very short and appressed, or rudimentary; fruiting calyx depressed-globose; capsule globose-triangular, at full maturity spreading 1½″ to 2″ broad (late in the season some terminal flowers may be imperfectly petaliferous, producing capsules which spread 3″), mostly three to many seeded; seeds reddish brown, finely and evenly papillose, the papillæ prominent under the microscope and often disposed in regular lines.

HELIANTHEMUM MAJUS (L.).

Taller, stouter and stricter than *H. Canadense*, from one to two feet high; branches more numerous, simple, much shorter, and never at all flexuous, commonly but one to two inches long, often less, only exceptionally reaching a length of four inches; entire plant more hoary canescent than in *Canadense*, with finer and closer stellate pubescence, especially on the primary inflorescence, and without the scattering of longer looser hairs usually seen in that species; more closely leafy, the leaves less spreading, frequently sub-opposite, or even sub-verticillate, on the stem; longer and relatively narrower, more tapering at base and apex, and on slightly longer petioles, the strong tendency to revolute margins seen in *Canadense* scarcely manifest; furthermore, the leaves are thicker and of softer texture, and wilt soon after being gathered, which is not the case with the stiffer and harsher leaves of the contrasted plant; stem reddish from the first, and early naked for several inches at the base; primary petaliferous flowers pale yellow, smaller than in *Canadense*, several to many (5 to 12), bracteolate in one to three slender cymose racemes, commonly 1½ inches long, terminating the simple stem, the axillary branches developing later but rarely overtopping the primary inflorescence; sepals densely downy canescent or softly pubescent, smaller and less acute than in *Canadense*, the narrow outer sepals as long as the inner or nearly so, instead of much shorter; capsules 1½″ to 2″ long, conspicuously triangular, broadly ovate and abruptly short pointed; clusters of apetalous flowers very short peduncled, appearing sessile, somewhat separated and mostly two to several-flowered low on the branches, above becoming more approximate and compound, and aggregated into dense, oblong, many-flowered, leafy heads terminating the short branches; frequently the branches are crowded with clusters of small leaves and apetalous flowers; in this condition the plant bears strongly the aspect of a *Lechea;* capsules of secondary flowers at full maturity spreading ¾″ to 1¼″, more oblong and pointed than in *Canadense*, of a

deeper color and with a more polished surface, mostly one to three-seeded; seeds pale, yellowish-brown, finely and evenly reticulated, the network on the angles tending to break up into a papillose roughness.

H. Canadense I find in poor, light or sandy soil, often on or near rocks, and in partly shaded situations; *H. majus* grows in dry open ground, never on rocks or in shade, as far as I have observed. It comes into flower about the fourth week of June, two or three weeks later than *Canadense*, which, in the same neighborhood, may be found with full-sized pods before *majus* shows the first signs of flower-buds.

It should be said that these observations apply to the plants as they occur in the vicinity of New York, where also the specimens were collected from which the foregoing descriptions are drawn. The general distribution of the two plants, and their relative abundance, now become subjects of much interest in regard to which it is to be hoped that early information will be forthcoming. I may add that at York Harbor, Maine, in August last, *H. majus* was found to be a common plant over the downs near the sea, while *H. Canadense* was not met with.

Riverdale on Hudson, New York City.

New or little known Plants of the Southern States.

By T. H. Kearney, Jr.

(Plates 206–209.)

Galium Parisiense L. Sp. Pl. 108 (1753).

Galium Anglicum Huds. Fl. Angl. Ed. 2, 69 (1778).

Abundantly naturalized in dry, sandy fields about Knoxville, Tenn. June–August.

Disporum maculatum (Buckley) Britton, Bull. Torr. Club, **15**: 188 (1888).

Collected near Knoxville, Tenn. Grows in rich soil on bluffs of the Tennessee River. Also along the Emory River, near Harriman, Roane Co. April.

CORALLORHIZA WISTERIANA Conrad, Journ. Acad. Phila. 6: 145 (1829).

Stem slender, light brown, 20–35 cm. high, bearing several sheathing, scale-like leaves; raceme 6–15-flowered; flowers 15 mm. long, slender-pedicelled, erect; lip white with conspicuous crimson spots, 8–10 mm. long, 4–5 mm. broad below the middle, abruptly clawed, ovate, narrowed towards the more or less notched apex, truncate at base, crenulate; lamellæ two short, prominent ridges; spur a more or less conspicuous protuberance adnate to the summit of the ovary; column strongly two-winged towards the base; capsule elliptic-oblong to oblong-obovoid, about 1 cm. long, drooping when mature.

New England: Robbins; Pennsylvania: near Philadelphia, Wister, Carsons; Mercersburg, Porter; Delaware: Wilmington, Canby; Georgia: Chapman; Florida: Chapman; Merritt's Island, A. H. Curtiss (No. 2816, distributed as *C. odontorhiza*); Alabama: Tuscaloosa, Johnson; Texas: Wright; Tennessee: Dandridge, Rugel; Knoxville, Kearney; Ohio: Cincinnati, Lea.

Corallorhiza Wisteriana has been referred by most recent botanists to *C. odontorhiza*, but is beautifully distinct. It may be recognized by its usually taller and more robust stem, flowers two or three times larger, lip less rounded, notched at apex, truncate and more abruptly clawed at base, with the lamellæ much more prominent, the distinct protuberance of the spur, and the prominent wings at the base of the column. There is also a marked difference in its period of flowering,—from February to May, while *C. odontorhiza* flowers from July to October. It appears to be more common than *C. odontorhiza*, especially southward.

CASTANEA NANA Muhl. Cat. 86 (1813).

Fagus pumila var. *præcox* Walt. Fl. Car. 233 (1788), *fide* Elliott (name only).

Castanea alnifolia Nutt. Gen. 2: 217 (1818).

This species has been reduced to *Castanea pumila* by those later-day botanists who have made a practice of "lumping" plants with which they are not familiar into some well-known species. But the best botanists of the early part of the century—Muhlenberg, Nuttall, Elliott—agreed as to its validity. It is difficult to conceive how any one with Elliott's excellent description before him could have slighted its claim to such rank.

During the past summer I collected this plant near Jesup, Wayne County, Georgia, and was struck by its utter dissimilarity to *C. pumila*. It may be described as follows:

Stem simple or little branched, 3–5 dm. high, slender, glabrous below, downy-pubescent above, as are the branches, petioles and peduncles; bark dull gray-brown; leaves large in proportion to the size of the plant, 12–15 cm. long, 5–6 cm. broad, oblong or oblong-obovate, acuminate or more often obtuse at apex, rounded at base, coarsely sinuate-dentate with short, spreading and rigid teeth, thick, almost coriaceous, upper surface dark green, glabrous and shining, lower surface covered with a short, dense, rather tawny, or, at least, not bright-white down; petioles 4–5 mm. long; mid-nerve prominent, primary veins 12–15 pairs, disposed at irregular intervals, branching and often recurved at the ends; peduncles elongated, bearing numerous, rather remote clusters of staminate flowers above and a few pistillate flowers below; "involucrum of the fertile florets 1–3, on the lower part sterile. Ament generally maturing as in the preceding species [*C. pumila*]. The nut is generally much larger but less abundant than those of the preceding species."*

Differs from *C. pumila* in the dwarf habit, broader leaves, which are oblong or obovate-oblong and usually obtuse, while those of *C. pumila* are usually ovate-lanceolate and acuminate, in the shorter, more rigid and more spreading teeth, in the shining upper surface of the leaf and the more tawny hue of the down on the lower surface and in the shorter petioles.

Georgia: Jesup, Kearney; Florida: Jamony, Rugel; Louisiana: Red River, Hale. Flowers in May (Plate 206).

SPIRÆA VIRGINIANA Britton, Bull. Torr. Club, **17**: 314 (1890).

This well-marked *Spiræa* grows in considerable quantity on cliffs of loose shale in the Gap of the Chilhowee Mountain, through which the Little River flows in Blount County, Tennessee. Collected in June, 1891, and again in June, 1893.

SAXIFRAGA GRAYANA Britton, Mem. Torr. Club, **5**: 178 (1894).

Saxifraga Caroliniana A. Gray, Mem. Am. Acad. (II.) **3**: 39 (1848), not Schleich.

Abundant on limestone cliffs on the Tennessee River at Knoxville (altitude about 900 feet). Flowers in April. Although the Knoxville plant has a spreading calyx, it corresponds in every

* Ell. Bot. S. C. & Ga. **2**: 615.

other respect with Gray's type from Grandfather Mountain, North Carolina, and with specimens collected on Walker Mountain, Va., by members of the Torrey Club in May, 1892.* It is larger in every way and more hairy than *S. Careyana;* leaves thicker, more pointed at base, on shorter, stouter and very hairy petioles, the older ones often vinous-red on the under surface; petals strongly bimaculate; filaments clavate, purple with age; capsules less divergent. The character of reflexed or spreading sepals is probably of less importance in distinguishing the two species than has been supposed, but they are abundantly distinct in other respects. (Plate 207.)

EUPHORBIA MERCURIALINA Michx. Fl. Bor. Am. **2**: 212 (1803).

Abundant in the locality where Michaux originally found it, "in collibus circa Knoxville." It grows in rich soil on wooded slopes, and flowers in April and May.

CAREX AUSTRO-CAROLINIANA Bailey, Bull. Torr. Club, **20**: 428 (1893).

This fine *Carex* was discovered by Buckley on Table Mt., S. C., many years ago, and had not since been collected until in April, 1893, I had the good fortune to meet with it in the "gorge" of the Hiwassee River in Polk Co., Tenn. It grows on moist rocks and is a strikingly handsome species. As no specimens bearing mature perigynia have, to my knowledge, been hitherto preserved, a description drawn from good material is here inserted.

Culms numerous, tufted, 25–35 cm. high, slender, compressed, striate; root-leaves bright green, longer or shorter than the culms, flat, channelled, the cauline reduced to sheathing bracts which are erect, spreading or recurved at the apex, with reddish-brown, membranaceous edges; pistillate spikes 1–3, on erect or somewhat recurved, filiform peduncles, the lower sometimes 9 cm. long, 3–6-flowered; scales of pistillate flowers brown, the lower cuspidate, as long as or longer than the perigynia, the upper acute or obtusish, not half as long as the perigynia; perigynium 3–4 mm. long, triangular, somewhat curved, pointed but hardly beaked, about 30-nerved, minutely granulose; achene sharply triangular, filling the perigynium; stigmas 3, conspicuous; staminate spike terminal, slender peduncled, sometimes with a few pistillate flowers at base, 10–15 mm. long, usually more or less curved, scales brown, obtuse.

* See Mem. Torr. Club, 4: 118 (1894).

The long, filiform peduncles remind one of *C. laxiculmis*, but, as Prof. Bailey has remarked, the colored leafless sheaths and the characters of the staminate spike indicate the affinity to *C. plantaginea*. The perigynia are about two-thirds as large as those of *C. plantaginea*, which they much resemble (Plate 208).

COLLINSONIA VERTICILLATA Baldw.; Ell. Bot. S. C. & Ga. 1: 36 (1816).

Grows in rich soil in a wooded ravine near Knoxville, Tenn. Flowers in May.

STEIRONEMA INTERMEDIUM n. sp.

Perennial; stem erect, 4–8 dm. high, slender, rather obtusely 4-angled, glabrous below, minutely glandular puberulent above as are the petioles, pedicels and calyx; lower leaves 5–7 cm. long, 2–4 cm. broad (the floral much smaller), from broadly ovate below to narrowly ovate-lanceolate above, acute at apex, rounded or more usually truncate, cuneate or subcordate, and unequal at base, margins entire, somewhat sinuate, minutely ciliolate, veins conspicuous but not prominent, sometimes even slightly impressed, often obscurely scurfy-puberulent, leaves otherwise smooth; petioles slender, the lower 3–4 cm. long, ciliate only at the connate base as in *S. radicans;* inflorescence an open leafly panicle, the ultimate divisions corymbose; pedicels slender; 2–6 times as long as the flower; calyx 10–12 mm. in diameter, the segments lanceolate, very acute; corolla bright golden-yellow, 18–20 mm. in diameter, segments cuspidate; capsule about one-third shorter than the calyx lobes.

Virginia: Aikin; Kentucky: Harlan Co., Kearney (No. 121); Tennessee: Knox Co., Kearney; Alabama: Talladega Co., Mohr.

On dry sandstone rocks at an elevation of from 900–1600 ft. Flowers in June and July (Plate 209).

In a genus like *Steironema*, of which the species are strongly confluent, the making of new ones on any but well-marked and constant characters is not advisable. The plant in question is so distinct from any other form known to me, however, that I have no hesitation in giving it specific rank. The fact that it holds its characters over such a wide range is strong evidence of its validity.

The name chosen for the species indicates its intermediate position between *Steironema ciliatum* and *S. radicans*. Apart from the erect habit, the general appearance of the plant suggests more

forcibly the latter. It differs from *S. ciliatum* in its more slender habit, leaves shorter and proportionately broader, less conspicuously pointed, petioles ciliate only at the connate base, calyx and corolla smaller. The conspicuously ciliate petiole is a remarkably constant character in *S. ciliatum*. Our plant is distinguished from *S. radicans* by its erect habit, leaves shorter and broader, not pointed at base, and by its much larger and more deeply colored corolla. The habitat is strikingly different from that of either of the two related species. *S. ciliatum* is a plant of low woods and banks of streams, while *S. radicans* grows is grassy swamps and woods along the coast and in the Mississippi Valley.

ANTENNARIA PLANTAGINIFOLIA MONOCEPHALA Torr. & Gray, Fl. N. Am. **2**: 431 (1841–43).

Since reporting this variety from Knoxville, Tennessee, I have collected it in two other localities in the eastern part of that State —near Ducktown, in Polk Co., and near Harriman, in Roane Co. It seems to be a not uncommon plant in the Southern Alleghanies.

RUBUS MILLSPAUGHII Britton, Bull. Torr. Club, **18**: 366 (1891).

Collected at the summit of Thunderhead (about 6,500 feet), and on Chilhowee Mt. (at about 1,500 feet), in Blount Co., Tenn.

ASARUM MACRANTHUM (Shuttl.) Small, Mem. Torr. Club, **5**: 136 (1894).

Collected by Mr. A. Ruth on the banks of the Ocoee in Polk Co., Tenn., in May, 1891, and by me on the banks of the Emory, in Roane Co., in April, 1893.

PLUCHEA PETIOLATA Cass. Dict. Sc. Nat. **42**: 2 (1826).

P. fœtida D.C. Prodr. **5**: 452 (1836), not *P. fœtida* (L.) B. S. P.

This plant is certainly sufficiently well characterized to be maintained as a species distinct from *P. camphorata*. It differs from the common plant of the Atlantic coast in its taller and stouter stem, 1–2 m. high, which is more strongly sulcate, more distinctly angled and less pubescent above; in its thinner and larger leaves 10–18 cm. long, 3–6 cm. wide, which are more pointed at either end, much smoother, of a brighter green color, and taper into conspicuous, slender petioles 20–25 mm. long; in the smaller heads, which are 4–5 mm. high, while those of

P. camphorata are 5–6 mm. high; in the involucral scales, which are merely resinous-granulose and with ciliate margins, while those of *P. camphorata* are densely puberulent all over; and in the shorter pubescence of the much less strongly ribbed achenes.

While *P. camphorata* is a plant of brackish marshes along the Atlantic coast, *P. petiolata* is found in non-saline soil in low ground at roadsides or along streams in the interior. Its range is indicated by the following localities: North Carolina: Rowan Co., Heller; Florida: Chapman; Alabama: Buckley; Tennessee: Buckley; Knox Co., Kearney; Kentucky: Short; Kentucky River: Peter; Harlan Co., Kearney (No. 272, distributed as *P. fœtida*).

Cryptogamic Notes from Long Island.—I.

By S. Ely Jelliffe.

The following list of Musci includes all the mosses that are known to the writer as occurring upon Long Island. It is in no sense a complete list, but is here presented for the sake of comparison and in the hope that it may serve as a stimulus to Long Island collectors. Most of the species recorded are to be found in the "Local Collection" in the Herbarium of the Brooklyn Institute of Arts and Sciences.

Sphagna.

Sphagnum cymbifolium Ehrh.
Sphagnum cymbifolium squarrulosum Nees & Hornsch.
Sphagnum acutifolium Ehrh.
Sphagnum subsecundum Nees.
Sphagnum subsecundum obesum (Wils.) Schimp.
Sphagnum cuspidatum Ehrh.
Sphagnum cuspidatum plumosum Nees.
Sphagnum cuspidatum intermedium (Hoffm.) Rau.

Musci.

Polytrichum commune L.
Polytrichum Ohioense Ren. & Card.
Polytrichum juniperinum Willd.
Polytrichum tenue Menz. (*Pogonatum brevicaule* Beauv).
Catharinea angustata Brid.

Catharinea undulata (L.) Web. & Mohr.
Catharinea crispa James.
Georgia pellucida (L.) Rab.
Fissidens osmundoides (Sw.) Hedw.
Fissidens taxifolius (L.) Hedw.
Astrophyllum sylvaticum Lindb.
Astrophyllum cuspidatum (L.) Lindb.
Astrophyllum hornum (L.) Lindb.
Astrophyllum punctatum (L.) Lindb.
Sphærocephalus palustris (L.) Lindb.
Sphærocephalus heterostichus (Brid.) E. G. Britton.
Bartramia pomiformis (L.) Hedw.
Bryum cæspiticium L.
Bryum argenteum L.
Bryum proliferum (L.) Sibth.
Bryum intermedium Brid.
Leptobryum pyriforme (L.) Wils.
Funaria hygrometrica (L.) Sibth.
Funaria flavicans Michx.
Physcomitrium turbinatum (Michx.) E. G. Britton.
Barbula unguiculata (Huds.) Hedw.
Barbula curvirostris (Ehrh.) Lindb.
Mollia viridula (L.) Lindb. (*Weisia viridula* Hedw.).
Sphærangium muticum (Schreb.) Schimp.
Pottia truncatula (L.) Lindb.
Leucobryum glaucum (L.) Schimp.
Dicranum flagellare Hedw.
Dicranum scoparium (L.) Hedw.
Dicranum scoparium orthophyllum Brid.
Dicranum interruptum Brid.
Dicranum spurium Hedw.
Dicranum undulatum Ehrh.
Dicranella heteromalla (L.) Schimp.
Dicranella heteromalla orthocarpa (Aust.) C. Müll.
Ditrichum tortile (Schrad.) Hampe.
Ditrichum pallidum (Schreb.) Hampe.
Ceratodon purpureus (L.) Brid.
Ceratodon purpureus aristatus Aust.
Weissia Americana (Beauv.) Lindb. (*Ulota Hutchinsiæ* Sch.).
Weissia ulophylla Ehrh. (*Ulota crispa* Brid.).
Orthotrichum Ohioense citrinum (Aust.) Lesq. & James.
Orthotrichum strangulatum Beauv.
Orthotrichum psilocarpum James.
Drummondia prorepens (Hedw.) E. G. Britton.
Grimmia Pennsylvanica Schwægr.
Grimmia acicularis (L.) C. Muell.
Thuidium recognitum (Hedw.) Lindb.

Thuidium delicatulum (L.) Mitt.
Anomodon rostratus (Hedw.) Sch.
Anomodon attenuatus (Schreb.) Huds.
Amblystegium adnatum Hedw.
Amblystegium serpens (L.) Br. & Sch.
Amblystegium serpens orthocladon (Beauv.) Aust.
Amblystegium varium (Hedw.) Lindb.
Amblystegium riparium (L.) Br. & Sch.
Hypnum lætum Brid.
Hypnum plumosum Huds.
Hypnum rivulare Bruch.
Hypnum Novæ-Angliæ Sull. & Lesq.
Hypnum strigosum Hoffm.
Hypnum Boscii Schwægr.
Hypnum Sullivantii Spruce.
Hypnum demissum Wils.
Hypnum serrulatum Hedw.
Thelia hirtella (Hedw.) Sull.
Thelia asprella (Schimp.) Sull.
Hylocomium parietinum (L.) Lindb.
Hylocomium triquetrum (L.) Br. & Sch.
Stereodon imponens (Hedw.) Brid.
Stereodon pallescens (Hedw.) Lindb.
Stereodon Haldanianum (Grev.) Lindb.
Stereodon pratense (Koch).
Pylaisia velutina Br. & Sch.
Pylaisia subdenticulata Sch.
Plagiothecium denticulatum (L.) Br. & Sch.
Plagiothecium Sullivantiæ Sch.
Cylindrothecium seductrix (Hedw.) Sull.
Climacium Americanum Brid.
Dichelyma capillacea (Dicks.) Br. & Sch.
Fontinalis antipyretica gigantea Sull.
Leucodon julaceus (Hedw.) Sull.
Hedwigia ciliata Ehrh.

A new Selaginella from Mexico.

By Lucien M. Underwood.

Selaginella reflexa n. sp. Stems 2′–3′ long, close creeping, subbipinnate, emitting rootlets along the entire length below; leaves of the lower plane ovate, obtuse, serrate-ciliate throughout and provided with a narrow hyaline border, the upper portion strongly reflexed in drying especially in the lower half of the

stem; midrib distinct, vanishing below the apex of the leaf; leaves of the upper plane ovate, abruptly short acuminate, densely serrate-ciliate and provided with a conspicuous white margin, slightly oblique and mostly closely imbricate; spikes scarcely quadrangular, short, lax, with ovate-lanceolate bracts which are ciliate with a narrow pellucid margin.

Damp rocks and banks near Guadalajara, Mexico, 28 Sept. 1889 (C. G. Pringle, No. 2635), also 1893.

Allied to *S. Schiedeana* A. Br., but differs in the conspicuous white margins of the leaves of the upper plane. Four or occasionally three rows of cells enter into this pellucid margin, and as in the above named species each bears a small tubercle. It differs further in the shorter and thicker terminal mucro and in the character and abundance of the tooth-like cilia. In *S. Schiedeana* these are scattered, long and slender, and stand at right angles to the leaf-margin; in *S. reflexa* they are two or three times as numerous and stand like serrations for the most part, each one short and pointing forwards. In *S. reflexa* the fruiting spike is shorter and more lax, and the leaves of the lower plane are strongly recurved, leaving the white-margined upper leaves lying like overlapping scales across the upper surface of the cord-like stem.

Botanical Notes.

Pistillodia of Podophyllum stamen. Among cultivated plants it is not unusual to find instances of stamens taking on the form if not the function of pistils, the most striking examples being perhaps found among the poppies and lilies. With wild plants any such tendency is less frequent and it may be interesting to note that a student, while at class-work examining the flowers of the common mandrake (*Podophyllum peltatum*), called my attention to a peculiar floral structure which proved to be a stamen with the upper portion of the anther bearing a stigma of the corrugate form common to the *Podophyllum* pistil, while below the stamen was of the normal form.

Byron D. Halsted.

Reviews.

Synopsis of Malveæ, or an Enumeration of the Plants contained in the first Tribe of the Natural Order Malvaceæ. Edmund G Baker (8vo, pp. 824; reprinted from the Journal of Botany, 1890–1894).

Mr. Baker has laid the botanical world under deep obligation to him by his publication of the series of papers on Malveæ, now conveniently brought together in one volume. He is modest in terming this work an "enumeration;" it is really much more than this, for diagnoses of all the species of the genera first taken up are given, and we understand from his preface that they would have been given throughout had the space of the Journal been available for the purpose. We presume that the learned editor of the Journal felt that he needed the space which might otherwise have most advantageously been assigned Mr. Baker for the purpose of defending his antiquated views on nomenclature. It is unfortunate that Mr. Baker did not select a more elastic organ for his papers.

The sequence adopted for the genera and the characters relied on for their limitation follow pretty closely the treatment of the group by Bentham and Hooker. *Sidastrum* is a proposed new genus based on *Sida quinquenervia* Duchass. In a supplement Mr. Baker expresses himself as favoring the recognition of Prof. Greene's genus *Hesperalcea*, but he does not agree with Dr. Kuntze in regarding *Malvæopsis* of Presl as an equivalent of *Malvastrum* A. Gray, noting that the type of *Malvæopsis* (*Malva anomala* Link & Otto) is not definitely determined, and is doubtfully referred by him to *Sphæralcea elegans* Don.

A large number of species are described as new, South and Central American ones being added to the genera *Malvastrum*, *Cristaria*, *Gaya*, *Sida*, *Abutilon* and *Sphæralcea*. A comprehensive index is added. N. L. B.

Description of some fossil plants from the Great Falls coal field of Montana. Wm. M. Fontaine. Proc. U. S. Nat. Mus. **15**: 487–495, *pl. 82–84* (1892).

The following new species and varieties are described: *Aspidium monocarpum*, *A. angustipinnatum* Font. var. *Montanense*, *Pe-*

copteris Montanensis, Cladophlebis heterophylla and *Zamites Montanensis*. It is unfortunate that the author should have chosen this latter name for a new species, in view of *Zamites Montana* Dawson (on the Mesozoic Floras of the Rocky Mountain Region of Canada, Trans. Roy. Soc. Canada, Sec. iv. (1885) p. 7), which not only resembles it closely in name, but in character and in geological horizon. In fact the absence of all reference to Dawson's work leads us to suspect that the author must have overlooked it, and we are inclined to doubt the validity of this new species, after careful comparison with a large amount of the material from Great Falls. The same may also be said in regard to *Aspidium Montanense*, which is suspiciously similar to *Asplenium Albertum*, Dawson. A. H.

Proceedings of the Club.

TUESDAY EVENING, MAY 8TH, 1894.

Dr. Britton in the chair and 28 persons present.

The Field Committee reported that all the announced meetings had been held, that the season was very advanced, and the meetings highly appreciated and largely attended.

A communication was read from the Brooklyn Citizens' Committee of the American Association for the Advancement of Science, 43d Meeting, inviting the members of the Club to participate in its hospitalities on the occcasion of that meeting. The communication was accepted and the Secretary instructed to present the thanks of the Club.

A communication was read from Mr. W. T. Bell, announcing the formation of a botanical club with twenty members, in Franklin, Venango county, Pennsylvania.

Dr. Britton then announced the death of Mr. Thomas Morong, on Thursday, April 26, at his son's home in Ashland, Massachusetts, and spoke briefly of his life and work. Upon motion, the following committee was appointed to draw up suitable resolutions concerning the death of Mr. Morong: Hon. Addison Brown, Dr. T. F. Allen, Dr. T. C. Porter.

The following active members were then unanimously elected: Rev. E. C. Bolles, Mr. Wm. D. Young, Dr. Joseph H. Hunt, Mr. A. W. Rand.

Dr. Emily L. Gregory presented some notes upon the subject of the botanical work done at Barnard College.

Mr. Arthur Hollick read his two announced papers: "A New Fossil *Nelumbo* from the Laramie Group of Colorado;" "Additions to the Flora of Richmond County," Contribution No. 7.

WEDNESDAY EVENING, MAY 30, 1894.

The President in the chair and 16 persons present.

The following were elected active members: Miss Marion Satterlee, Mr. L. G. Fay, Miss A. E. Moore, Miss C. Murray, Miss Marie L. Sanial, Mrs. Chas. M. Kirby, Mrs. W. Brookfield, Mr. Joseph Sieke.

The President appointed Dr. S. E. Jelliffe and Mr. T. H. Kearney, Jr., upon the Instruction Committee.

Dr. Britton read a memorial on the life and works of Mr. Morong, which is published in this issue of the BULLETIN.

The announced paper of the evening was then read by Mrs. Britton, entitled "Revision of the Genus *Bruchia*," illustrated by drawings and specimens.

Mr. Pollard reported finding *Ranunculus fascicularis* at Franklin Furnace, Sussex county, New Jersey.

Mr. Van Sickle reported finding *Clintonia borealis* at Stockholm, New Jersey, with a bract on the scape; and also that he had found *Phacelia Purshii* at Granton, New Jersey, on ballast.

The Club then adjourned to meet on the second Tuesday in October.

Index to Recent Literature relating to American Botany.

Allen, T. F. Remarks on *Chara gymnopus* A. Br. with Descriptions of new Species of *Chara* and *Nitella*. Bull. Torr. Bot. Club, **21**: 162–167, *pl. 185–192*. 25 Ap. 1892.

Describes and illustrates *Chara Cubensis* (Cuba), *C. Carmenensis* (L. Cal.), *C. inconstans Hicksiana* (Michigan), *C. depauperata* (Bahamas), *Nitella Mexicana* (Mexico), *N. Californica* (Cal.), *N. occidentalis* (Cal.) and *N. Japonica*.

Arnell, H. W. Moss-studier. Bot. Notis. 1894, 54–63. 1894.
Notes on Species of *Catharinea*, *Pohlia*, *Tortula* and *Amblystegium*.

Atkinson, Geo. F. Steps toward a Revision of the linosporous Species of North American Graminicolous Hypocreaceæ. Bull. Torr. Bot. Club, **21**: 222–225. 25 My. 1894.
Establishes the genera *Dothichloe*, *Echinodothis* and *Myriogenospora* with the new species *D. Aristideæ* and *M. Paspali*.

Baker, J. G. *Tigridia violacea*. Curt. Bot. Mag. **50**: *t. 7356*. 1 My. 1894.
Native of Mexico.

Bay, J. Christian. Material for a Monograph on the Tannoids, with special reference to Vegetable Physiology. Ann. Rep. Missouri Bot. Gard. **5**: 61. 1894. (Reprint issued 18 My. 1893).

Beringer, George M. Notes on the Genus *Myrica*. Am. Journ. Pharm. **66**: 220. My. 1894. Reprint.

Beringer, George M. The Martindale Herbarium. Am. Journ. Pharm. **66**: reprint, pp. 4. My. 1894.

Bessey, C. E. A Synopsis of the larger Groups of the Vegetable Kingdom. Am. Nat. 1 Ja. 1894. Reprint.

Bessey, C. E. Eighth Annual Report of the Botanist of the Nebraska State Board of Agriculture. Ann. Rep. Neb. State Bd. Agric. Reprint, pp. 65–129. 27 My. 1894.

Britton, Elizabeth G. Contributions to American Bryology—VI. Bull. Torr. Bot. Club, **21**: 137–160. 25 Ap. 1894.
Discussion of Western American species of *Orthotrichum* and supplementary Notes on the N. A. species of *Weissia* (*Ulota*).

Britton, Elizabeth G. Contributions to American Bryology—VII. Bull. Torr. Bot. Club, **21**: 189–208, *pl. 197–203*. 25 My. 1894.
A revision of the genus *Physcomitrium*, with descriptions of five new species and with key to N. A. species. Describes and figures *P. pygmæum*, *P. turbinatum* and its var. *Langloisii*, *P. australe*, *P. Kellermani*, *P. Drummondii*, *P. Coloradense* and *P. Californicum*.

Britton, N. L. A new Systematic Botany of North America. Bull. Torr. Bot. Club, **21**: 230, 231. 25 My. 1894.

Britton, N. L. *Cratægus punctata canescens* n. var. Bull. Torr. Bot. Club, **21**: 231, 232. 25 My. 1894.

Chodat, R. Polygalaceæ novæ vel parum cognitæ. Bull. Herb. Boiss. **2**: 167–173. Ma. 1894.
Eight new species of *Monnina* and four of *Bredemeyera* are described with notes on other species, all from South America.

Clarke, Henry L. The meaning of Tree-Life. Am. Nat. **28**: 365. Jn. 1894.

Coste, l'Abbé H., et Sennen. Plantes aventices observées dans la Vallé de l'Orb à Bédarieux et a Hérépian. Bull. Soc Bot. Fr. **41**: 98–113. Fb. 1894.

Lepidium Virginicum, *Œnothera biennis*, *Aster lævigatus*, *Bidens bipinnata* and *Petunia parviflora* are among the North American species adventive in France.

Coville, Frederick V. A Criticism of the "Synonymy of *Juncodes*." Bot. Gaz. **19**: 208. 15 My. 1894.

Davidson, Anstruthers. Californian Field Notes—IV. Erythea, **2**: 83–85. 1 My. 1894.

Notes on northern species near Los Angeles. Describes *Senecio ilicetorum* as new.

De Candolle, C. New Piperaceæ from Bolivia. Bull. Torr. Bot. Club, **21**: 160, 161. 25 Ap. 1894.

Describes *Peperomia pseudo-rufescens*, *P. psilophylla* and *Piper longestylosum*.

Dewar, D. Perennial Sunflowers. Garden, **55**: 372. 5 My. 1894.

Illustration of *Helianthus lætiflorus*.

Farlow, W. G. Notes for Mushroom-Eaters. Gard. & For. Ja. and Fb. 1894. Reprint, pp. 1–20, *illustrated*.

Glatfelter, N. M. A Study of the Relations of *Salix nigra* and *Salix amygdaloides*, together with the Hybrids arising from them as these Species exhibit themselves in the Vicinity of St. Louis. Trans. Acad. Sci. St. Louis, **6**: 427–431, *pl. 1*. Ap. 1894.

Green, H. A Preliminary List of the Lichens of South Carolina, and some from North Carolina, mostly from Gaston County. Pamph. pp. 4, Chester. 1894.

Two hundred and ten species and varieties are listed.

Green, W. J. Black-Knot, and the Importance of concerted Action against it. Journ. Columbus Hort. Soc. **11**: 12–16. Ap. 1894.

Greene, Edward L. American Species of *Wulfenia*. Erythea, **2**: 80–83. 1 My. 1894.

Unites *Synthyris* with the genus and gives list of eight species.

Greene, Edward L. Observations on the Compositæ—V. Erythea, **2**: 69–76. 1 My. 1894.

Notes on *Pyrrocoma* continued. *Stenotus* and *Macronema* reinstated with lists of species. Discussion of species of *Chrysopsis*.

Grout, A. J. Notes from Vermont. Bot. Gaz. **19**: 200. 15 My. 1894.

Halsted, Byron D. Other poisonous Plants. Bot. Gaz. **19**: 200. 15 My. 1894.

Mentions osage orange (*Maclura aurantiaca*) and star cucumber (*Sicyos angulatus*).

Heim, M. F. L'Ovule de *l'Erythroxylon Coca*. Bull. Mens. Soc. Linn. Paris, No. 142. 7 Fb. 1894.

Hill, E. J. A study of *Quercus Leana*. Bot. Gaz. **19**: 171–177. 15 My. 1894.

Hoffman, Fr. Englisch-sprachliche, pharmaceutische, chemische und botanische Zeitschriften Nord Amerika's. Pham. Runds. **12**: 131–136. Jn. 1894.

Hooker, J. D. *Gynerium saccharoides*. Curt. Bot. Mag. **50**: *t. 7352*. 1 My. 1894.

Hooker, J. D. *Hillia tetrantha*. Curt. Bot. Mag. **50**: *t. 7355*. 1 My. 1894.

Native of Jamaica, Cuba and Mexico.

Hooker, J. D. *Sesbania punicea*. Curt. Bot. Mag. **50**: *t. 7353*. 1 My. 1894.

Native of South Brazil and Argentina.

Kearney, T. H., Jr. The Nomenclature of the Genus *Büttneria* Duham. Bull. Torr. Bot. Club, **21**: 173–175. 25 Ap. 1894.

Kellerman, W. A. Carnation Rust. Journ. Columbus Hort. Soc. **11**: 9, *pl. 1*. Ap. 1894.

Illustration of *Uromyces caryophyllinus*.

Kellicott, D. S. Some Museum and Granary Pests. Journ. Columbus Hort. Soc. **11**: 11. Ap. 1894.

Kronfeld, Mauritius. Typhaceæ. Flora Brasiliensis, **3**: 635–642, *t. 115*. 15 Ap. 1894.

McClatchie, Alfred James. Additions to the Flora of Los Angeles County and Catalina Island—I. Erythea, **2**: 76–80. 1 My. 1894.

List of plants new to the region. Describes three new species of *Ribes* from San Gabriel and San Antonio Mountains.

Meehan, T. *Aconitum uncinatum*. Meehans' Month. **4**: 81, *pl. 6*. Jn. 1894.

Meehan, T. Contributions to the Life-Histories of Plants, No. 10. Proc. Acad. Phila. 1894, 53–59. 1894.

Includes: The Origin of the coreless Apples; The Relations between Insects and the Flowers of *Impatiens fulva*; Apetalism and Seed Propulsion in *Lamium purpureum*; Fruiting of *Robinia hispida*; The Vitality of Seeds—*Antirrhinum glandulosum*; Dimorphic Flowers in Labiatæ—*Dracocephalum natans*; Apetalism in *Sisymbrium Thaliana*.

Meehan, T. Dr. William Baldwin. Meehans' Month. **4**: 95. Jn. 1894.

Olive, Edgar W. Contributions to the Histology of the Pontederiaceæ. Bot. Gaz. **19**: 178–184, *pl. 17*. 15 My. 1894.

Pieters, A. J. The Plants of Lake St. Clair. Bull. Mich. Fish Commission, No. 2, pamph. 3 Ap. 1894.

Plank, E. N. Botanical Notes from Texas—XVIII. Gard. & For. **7**: 203. 23 My. 1894.

Pohl, Julius. Botanische Mitteilung über *Hydrastis Canadensis*. Bibliotheca Botanica, Heft 29, 1–12, *pl. 1–4*. 1894.

Pollard, Charles Louis. The Genus *Cassia* in North America. Bull. Torr. Bot. Club, **21**: 208–222. 25 My. 1894.
Describes the North American species and gives key.

Porter, Thos. C. *Scutellaria resinosa* Torr. Bull. Torr. Bot. Club, **21**: 177. 25 Ap. 1894.
Determines identity of *S. resinosa* Torr. and *S. Wrightii* A. Gray, and proposes *S. Brittonii* for *S. resinosa* A. Gray, Synop. Flora, 381.

Robertson, Charles. Flowers and Insects—Rosaceæ and Compositæ. Trans. Acad. Sci. St. Louis, **6**: 435–480. Ap. 1894.

Rose, J. N. A new *Bumelia* from Mexico. Gard. & For. **7**: 195. 16 My. 1894.
Description and illustration of *Bumelia Palmeri*.

Sargent, C. S. *Elliottia racemosa*. Gard. & For. **7**: 206, *f. 37*. 23 My. 1894.

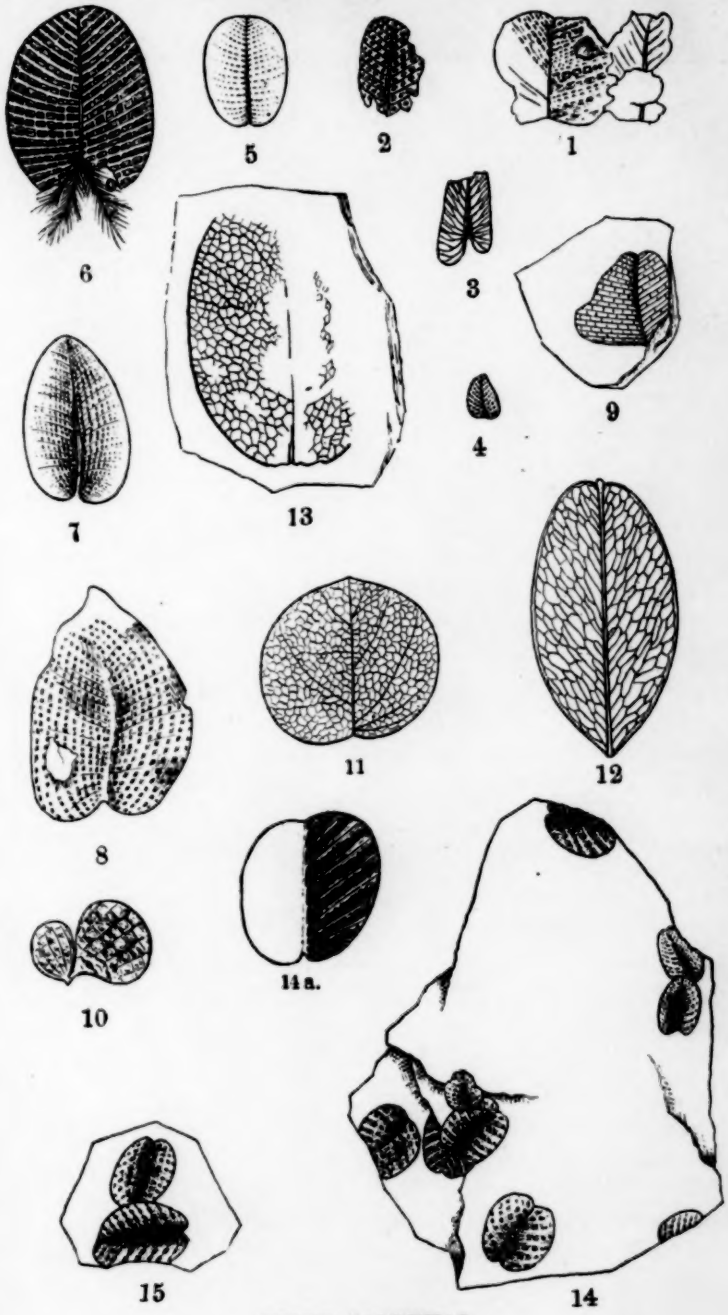
Sargent, C. S., Editor. Stephen Elliott. Gard. & For. **7**: 201, *f. 36*. 23 My. 1894.

Sargent, C. S., Editor. The Sassafras. Gard. & For. **7**: 211. 30 My. 1894.
With illustration of an old Sassafras tree on Long Island.

Sauvageau, M. C. Notes biologiques sur les *Potamogeton*. Journ. de Bot. **8**: 1–9; 21–42; 45–58; 98–106; 112–123; 140–148, *figs*. Ja.–Ap. 1894.

Schrenk, Hermann. Teratological Notes. Bull. Torr. Bot. Club, **21**: 226, 227, *pl. 204*. 25 My. 1894.
Notes on seedlings of beans and corn.

Schumann, Carolus. Triuridaceæ, Lileaceæ, Potamogetonaceæ, Zannichelliaceæ, Naiadaceæ, Ceratophyllaceæ, Batidaceæ, Goodenoughiaceæ, Cornaceæ. Flora Brasiliensis, **3**: 643–784, *t. 116–128*. 15 Ap 1894.



FOSSIL SALVINIAS.

CASTANEA NANA ELL.

SAXIFRAGA GRAYANA BRITTON.

CAREX AUSTRO-CAROLINIANA BAILEY.

STEIRONEMA INTERMEDIUM KEARNEY.

Contributions from the Herbarium of Columbia College.

[The numbers omitted from this list are out of print.]

No. 4. A List of Plants Collected by Miss Mary B. Croft at San Diego, Texas. By N. L. Britton and H. H. Rusby (1887), ... 25 cents.

No. 5. New or Noteworthy North American Phanerogams. By N. L. Britton (1888), ... 25 cents.

No. 6. An Enumeration of the Plants Collected by Dr. H. H. Rusby in South America, 1886–1887. By N. L. Britton. (Twenty-three parts published; not yet completed.)

No. 7. The Genus *Hicoria* of Rafinesque. By N. L. Britton (1888), 25 cents.

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